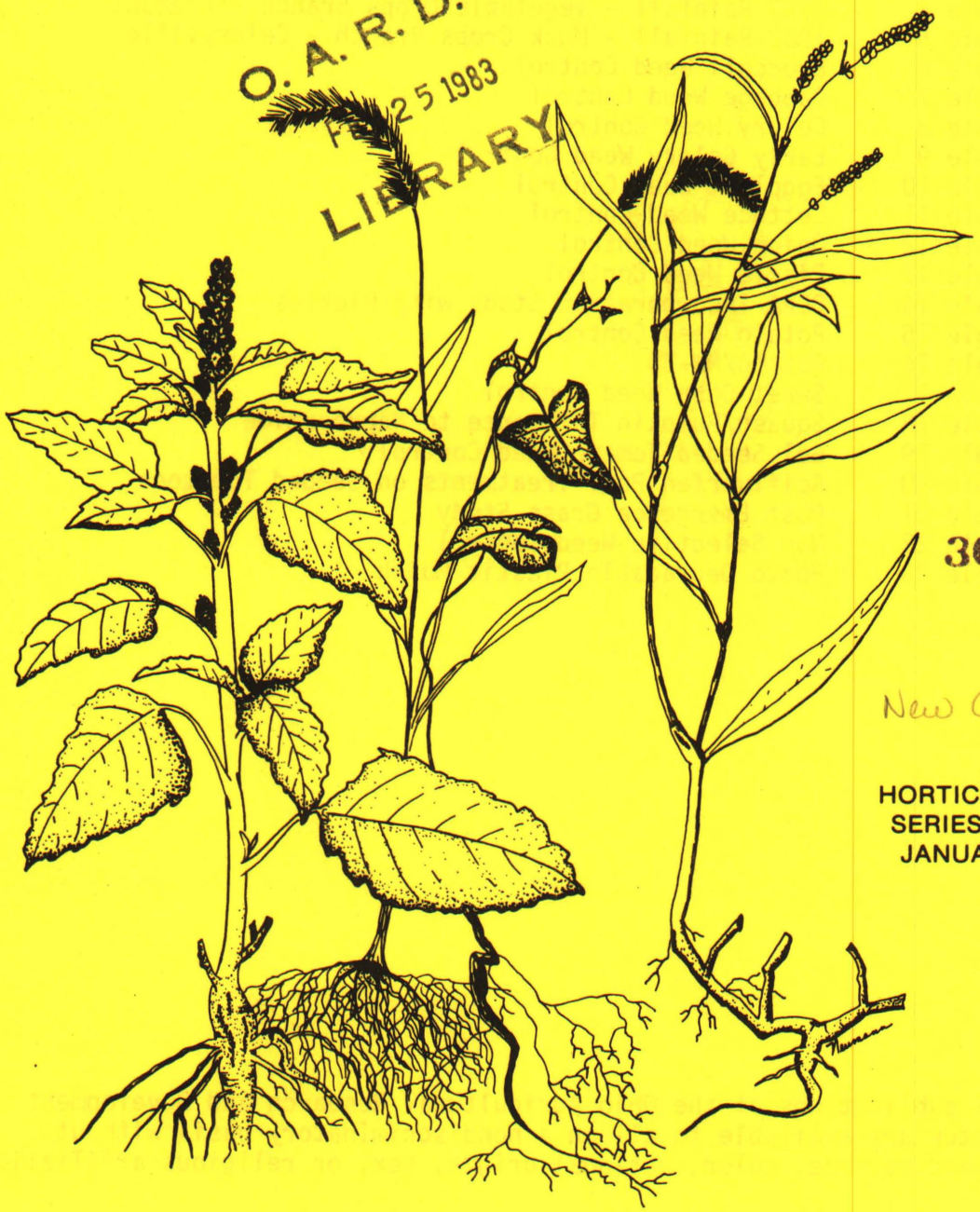
RESULTS OF WEED CONTROL STUDIES IN VEGETABLE CROPS -- 1982



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List of Tables

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Results of Field Experiments in Vegetable Weed Control - 1982

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General Materials and Methods

Abbreviations for herbicide application methods:

- PPI - Preplant incorporated
- Pre - Preemergence to the weed and crop
- Del Pre - Delayed preemergence, just prior to crop emergence
- Post - Postemergence to the weed and crop

All rates are in pounds of active ingredient per acre.

Sprayer:

Treatments were applied with a tractor-drawn sprayer. Spray pressure was 30 psi and spray volume was 24 gpa. Some treatments were applied with a CO_2 back pack type sprayer with a gpa of 42 and 30 psi.

Weed Ratings:

Weed counts were made by counting the number of weeds in a 1 square foot wire frame. Two counts were made for each replicate. Counts were made approximately 30 days after treatment. All plots were cultivated and hoed regularly after weed counts were taken (except unweeded check).

Statistical Analysis:

Duncans Multiple Range Test at the 5% level was performed on all experiments.

Appreciation is given to the following people for their assistance in conducting these research studies:

Mr. Gerald Myers - Farm Superintendent, Columbus
Mr. Richard Hassel - Branch Manager, Celeryville
Mr. C.C. Willer - Branch Manager, Fremont
Mr. Jerry Baron - Graduate Research Associate

The cover illustration is by Ms. Jackie TerMeer, formerly of the Department of Horticulture, The Ohio State University.

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Table 1. Chemicals Used in Experiments

Common Name	Trade Name
alachlor	Lasso
benefin	Balan
bensulide	Prefar
butylate + R 25788	Sutan +
CDAA	Randox
CDEC	Vegadex
CGA 82725*	Ciga-Geigy
chloramben	Amiben/Vegiben
chloroxuron	Tenoran
chlorpropham	Furloe, Chloro IPC
ctanazine	Bladex
DCPA	Dacthal
diclofop	Hoelon
dinoseb	Premerge
diphenamid	Enide
EPTC	Eptam
+ R25788	Eradicane
+ 25788 + R 33865	Eradicane Extra
ethalfluralin	Sonalin
fluazifop-butyl	Fusilade
glyphosate	Roundup
linuron	Lorox
metolachlor	Dual
metribuzin	Sencor/Lexone
Mon 097*	Monsanto
napropamide	Devrinol
naptalam	Alanap
nitrofen	Tok
oryzalin	Surflan
oxyfluorfen	Goal
pebulate	Tillam
pendimethalin	Prowl
PPG 844*	PPG Industries
prometryn	Caparol
pronamide	Kerb
propachlor	Ramrod, Bexton
sethoxydim	Poast
S-734	Uniroyal
trifluralin	Treflan
DPX-5184*	Dupont

*Experimental compound, name of manufacturer is listed in place of trade name.

Table 2. Weeds Mentioned in Report

Common Name	Scientific Name
Barnyard Grass	*Echinochloa crugalli*
Canada Thistle	*Cirsium arvense*
Common Lambsquarter	*Chenopodium album*
Common Mallow	*Malva neglecta*
Common Purslane	*Portulaca oleracea*
Common Ragweed	*Ambrosia artemisiifolia*
Fall Panicum	*Panicum dichotomiflorum*
Field Bindweed	*Convolvulus arvensis*
Knotweed	*Polygonum aviculare*
Ladysthumb Smartweed	*Polygonum persicaria*
Large Crabgrass	*Digitaria sanguinalis*
Lovegrass	*Eragrostis cilianensis*
Mayweed	*Anthemis cotula*
Pennsylvania Smartweed	*Polygonum pensylvanicum*
Redroot Pigweed	*Amaranthus retroflexus*
Shepardspurse	*Capella bursa-pastoris*
Sida spp.	*Sida spp.*
Smallflower Galinsoga	*Galinsoga parviflora*
Velvetleaf	*Abutilon theophrasti*
Venice Mallow	*Hibiscus trionum*
Yellow Foxtail	*Setaria lutescens*
Yellow Nutsedge	*Cyperus esculentus*
Yellow Woodsorrel	*Oxalis stricta*
Witchgrass	*Panicum capillare*

1982 Rainfall - Lane Avenue Farm, Columbus

Day	April	May	June	July	August	September	October
1			1.3			.2	
2							
3						1.7	
4							
5					.2		
6				.4			
7			.4				
8				1.1			
9							
10		.6	.7		.1		
11							.7 (finished)
12							
13							
14							
15							
16			.6				
17			.5				
18							
19	.05	.8					
20		.05					
21		.2	.2			.2	
22		.5					
23		.6			.3		
24							
25					.2		
26	.10						
27						.8	
28		.05				.2	
29			.2				
30			.5				
31							
TOTAL	.15	2.8	4.4	1.5	.8	3.1	.7

1982 Rainfall - Vegetable Crops Branch, Fremont

Day	May	June	July	August	September
1	.62	.02			
2			1.23	.05	
3			.42	.33	.02
4			.05	.12	
5		.04			
6					
7			.08	.03	
8				.04	.38
9		.55			.03
10			.31		
11			.06		
12					
13					
14					
15		.48			
16		.91			.37
17					.01
18	.05	.02	.35		
19	.10	.05	.16	.51	.33
20	.05	.39		.21	
21	.33	.54			
22	.82	.05		.02	.02
23	.01				
24				.04	.39
25					
26	.07				.05
27	2.02		.19		
28	.04	1.35			.79
29	1.50	.33			.29
30	.11				
31					
TOTAL	5.7	4.7	2.9	1.35	2.7

1982 Rainfall - Celeryville

Day	April	May	June	July	August	September
1			.34			
2	.50		.20			
3						.15
4					.40	
5				1.70	.07	
6	.10					
7			.10			
8				.40		
9	.10					
10		.63	.30		.74	
11						
12						
13						
14						
15						
16			.92			
17			1.25			
18						
19	.56					
20	.12			.27		
21	.05	.58	.45		.57	
22			.10			
23			.10			1.00
24		.95				.24
25						
26						
27						1.18
28		.70				.25
29			1.50			
30			.08			
31						
TOTAL	1.43	2.9	5.34	2.4	1.8	2.8

BROCCOLI WEED CONTROL - 1982

Location: Muck Crops Branch
Cultivar: Bravo
Transplanted: April 22
Treated: April 22
Weed Counts: May 26
Harvested: June 24
Soil Type Carlisle Muck, 75% O.M., pH 5.3
Plot Size: 1 row 3 ft. apart, 18 ft. long
Plot Design: Randomized Complete Block with 4 reps

Summary: Napropamide was not effective in controlling weed growth on muck soil. CDAA when applied as a spray was more effective than the granular formulation, when applied at equivalent rates. Alachlor was more effective in controlling weeds than either propachlor or metolachlor.

Metolachlor caused some chlorosis to the leaf margins of the Broccoli plants. However, this did not affect yield.

TREATMENT			NUMBER OF WEEDS PER 1 FT^2						18 FT.ROW
Herbicide	Method	Lb ai/A	Fall Panicum	Total Grass	Common Purslane	Ladysthumb Smartweed	Common Lambsquarter	Total BRDl	Total Wt.(lbs)
Unweeded Check	-	-	5.8	8.8	0.8	5.8	3.8	22.3	7.9
Handweeded Check	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Napropamide	PPI	2.0	2.8	5.0	0.8	4.5	1.8	17.3	8.2
Napropamide	PPI	4.0	1.3	5.3	0.8	4.0	1.8	17.5	7.7
CDAA EC	Post Plant	4.0	0.5	1.5	0.0	3.0	0.3	4.5	6.9
CDAA G	Post Plant	4.0	1.8	3.8	0.0	7.8	0.5	12.5	7.3
CDAA G	Post Plant	6.0	0.5	1.3	0.0	3.3	0.3	6.8	8.4
Propachlor	Post Plant	4.0	1.0	2.3	0.0	4.8	2.5	13.8	6.2
Alachlor	Post Plant	4.0	0.5	2.0	0.0	3.8	1.8	6.3	6.9
Alachlor G	Post Plant	4.0	0.3	0.5	0.0	2.8	0.8	4.0	8.0
Metolachlor	Post Plant	4.0	2.3	6.3	0.0	6.0	1.8	11.5	9.0
LSD 5%			NSD	5.45	0.37	NSD	NSD	6.32	NSD

Cabbage Weed Control

Location: Vegetable Crops Branch
Cultivar: King Cole
Seeded: May 4
Treated: PPI & Pre - May 4
Post - June 23 (Cabbage 5-6 leaves)
Weed Counts: June 3
Harvested: August 25
Soil Type: Sandy Loam, 3% O.M.
Plot Size: 1 row 30' long, rows 3' apart
Plot Design: Randomized complete block with 4 reps

Summary: Weed pressure in this field is light. Most treatments did a good job of controlling the major weed species.

Crop phytotoxicity ratings were made on June 3 for the PPI and Pre treatments, and on July 12 for the Post treatments. Incorporated treatments of pendimethalin stunted the cabbage which reduced yields. Yields from fluazifop-butyl treated cabbage are unexplainably low.

Treatment			No. Weeds/1 ft.[2]					Yield	
Herbicide	Method	Lb ai/A	Total Grass	Red Root Pigweed	Velvet-leaf	Total BRDL	Crop Phyto[1]	Plant Stand[2]	Total Wt.(lbs)
Unweeded check	---	---	1.0	1.5	0.5	4.3	8.9	0.0	0.0
Handweeded check	---	---	0.0	0.0	0.0	0.0	9.3	20.8	93.6
Bensulide	PPI	4.00	1.3	2.8	0.8	4.5	8.3	19.5	112.3
Napropamide	PPI	2.00	0.5	0.3	1.8	2.8	8.5	21.0	101.0
DCPA +	PPI	6.00	0.5	0.5	1.3	2.5	8.3	19.3	112.9
Napropamide	PPI	1.00							
Trifluralin +	PPI	0.50	0.0	0.3	0.3	0.8	8.3	19.5	102.5
Napropamide	PPI	1.00							
CDAA	Pre	4.00	0.5	0.8	0.5	2.3	8.5	20.0	116.3
Trifluralin	PPI	1.00	0.0	0.3	0.8	1.5	9.0	21.3	110.2
DCPA	Pre	8.00	1.0	2.3	1.5	5.0	9.4	20.5	117.8
DCPA +	Pre	8.00	Phyto[3]		Visible			21.8	113.6
Napropamide	Post	2.00	9.4		slight leaf chlorosis				
DCPA +	Pre	8.00						20.3	126.7
Alachlor	Post	2.00	9.0		slight stunting				
DCPA +	Pre	8.00						21.8	95.3
Metolachlor	Post	2.00	9.3		slight stunting				
DCPA +	Pre	8.00						20.5	102.5
Chloramben	Post	2.00	9.0		slight stunting and chlorosis				
DCPA +	Pre	8.00						20.5	103.2
Chloramben DS	Post	2.00	10.0						
DCPA +	Pre	8.00							112.7
Sethoxydim	Post	0.25	10.0						
DCPA +	Pre	8.00						15.0	83.4
Fluazifop-butyl	Post	0.25	9.3		slight chlorosis				
DCPA +	Pre	8.00						20.5	102.9
CDAA G	Post	4.00	9.5						
DCPA +	Pre	8.00						22.0	116.3
CDAA	Post	4.00	9.9						
CDAA +	Pre	4.00						19.5	128.4
CDAA G	Post	4.00	9.3		slight stunting				
Pendimethalin	PPI	1.00	0.0	0.5	1.0	2.0	7.6	16.0	76.2
Pendimethalin	PPI	1.25	0.3	0.5	0.3	1.5	7.8	16.5	83.7
Pendimethalin	Pre	0.75	0.5	2.3	0.8	6.3	9.0	19.8	113.2
Pendimethalin	Pre	1.00	0.0	1.0	1.3	3.0	8.8	20.5	108.3
Pendimethalin	Pre	1.25	0.5	0.3	0.5	1.0	8.4	19.3	122.8
Glyphosate +	Pre	4.00	1.3	6.5	0.8	9.8	9.9	19.8	113.2
Glyphosate	Wipe	33% sol.							
Glyphosate +	Pre	8.00	1.3	7.3	1.5	10.8	10.0	19.8	112.8
Glyphosate	Wipe	33% sol.							
LSD 5%			NSD	4.32	NSD	5.18	NSD	4.61	29.43

[1]Crop phytotoxicity rating: 1 = complete kill, 10 = no crop injury. A rating of 7 is acceptable.

[2]At harvest (after blocking)

[3]Post Phyto ratings made on July 12.

CELERY WEED CONTROL

Location: Muck Crops Branch
Cultivar: 688
Transplanted: May 4
Treated: Post I - May 4
Post II - June 9
Weed Counts: June 3
Harvested: July 20
Soil Type: Carlisle Muck, 75% O.M., pH 5.3
Plot Size: 1 row 18' long with 1 guard row between each treatment row
Plot Design: Randomized Complete Block with 3 reps

Summary: Weed counts were not made after the Post II treatments. These treatments were for crop phyto data only. CDAA emulsifiable concentrate and granular formulations both provided very acceptable weed control. Linuron and CIPC was not able to control the common purslane problem. Alachlor, propachlor and metolachlor all did an acceptable job of weed control.

Crop phytotoxicity ratings for the Post II applications were made on June 22. CDAA EC caused marginal leaf necrosis that affected approximately 5% of the total leaf area. CDAA granules caused no injury as did prometryn, propachlor and sethoxydim. Linuron produced minor curling of the leaves. Oxyfluorfen WP produced severe burning and necrosis to 50% of the leaf tissue. CIPC and fluazifop-butyl caused very minor leaf speckling to approximately 1% of the leaf area.

Treatment			Number of weeds per 1 ft^2					Yield/15 ft.
Herbicide	Method	Lb ai/A	Large Crabgrass	Total Grass	Red Root Pigweed	Common Purslane	Total BRDL	Total Plant Wt.(lbs.)
Unweeded Check	---	---	2.7	4.7	4.3	16.0	22.0	11.3
Handweeded Check	---	---	0.0	0.0	0.0	0.0	0.0	51.9
CDAA +	Post I	4.00	0.0	0.0	0.0	2.7	3.7	61.4
CDAA	Post II	4.00						
CDAA G +	Post I	4.00	0.0	0.0	0.3	1.7	2.3	64.2
CDAA G	Post II	4.00						
Linuron +	Post I	2.00	1.7	2.0	0.7	11.3	12.7	54.1
Prometryn	Post II	1.00						
Linuron +	Post I	2.00						54.3
Linuron	Post II	2.00						
Linuron +	Post I	2.00						51.5
Oxyfluorfen WP	Post II	0.13						
Linuron +	Post I	2.00						49.7
CIPC	Post II	2.00						
Linuron +	Post I	2.00						59.1
CDAA G	Post II	4.00						
CIPC	Post I	2.00	0.3	0.3	3.3	12.0	15.7	57.7
Alachlor	Post I	4.00	0.0	0.0	0.3	0.3	2.3	59.7
Propachlor	Post I	4.00	0.0	0.0	0.0	3.3	5.7	56.7
Metolachlor	Post I	4.00	0.0	0.0	0.0	3.3	4.3	61.3
Linuron +	Post I	2.00						57.5
Propachlor	Post II	4.00						
CDAA +	Post I	4.00						65.9
Sethoxydim	Post II	0.25						
CDAA +	Post I	4.00						52.7
Fluazifop-butyl	Post II	0.25						
LSD 5%			1.27	2.54	2.17	3.63	4.68	8.78

EARLY CELERY COVERED WITH WHITE PAPER ROW COVERS

Location: Muck Crops Branch
Cultivar: 5270
Transplanted: April 20
Treated & Covered: April 20
Removed Row Cover: May 11
Harvested: July 9
Plot Size: 1 row 25 ft. long
Plot Design: Randomized complete block with 3 reps.

Summary: This study was carried out by Mr. Richard Hassel, Muck Crops Branch Manager. Crop injury consisted of stunting and foliar burn.

Treatment			Rating[1]		Yield
Herbicide	Method	Lb ai/A	Weed Rating	Phyto Rating	Plant Wt.(lbs)
Unweeded check	---	---	5.0	1.0	39.4
CDAA G	Post	2.00	2.4	2.8	38.1
CDAA G	Post	4.00	2.5	3.0	39.4
CDEC G	Post	4.00	2.8	1.0	40.6
Alachlor G	Post	2.00	2.8	1.0	41.6
Alachlor G	Post	4.00	1.0	2.8	36.7
Alachlor EC	Post	2.00	2.5	1.5	37.8
Alachlor EC	Post	4.00	1.9	1.3	34.8
Propachlor	Post	2.00	2.0	0.8	34.9
Propachlor	Post	4.00	2.6	2.5	39.0
Linuron	Post	1.50	3.5	1.0	35.9
Linuron	Post	2.00	3.2	1.3	36.6
Linuron +	Post	1.50	3.6	2.9	35.9
Prometryn	Post	0.50			
Linuron +	Post	1.50	2.8	1.0	36.7
Prometryn	Post	1.00			
CDAA EC	Post	2.00	1.3	2.6	40.3
CDAA EC	Post	4.00	1.0	4.1	32.6
LSD 5%			1.3	0.9	NSD

[1]Rating scale: 1 = Complete weed control, no crop injury
5 = No weed control, complete crop kill

Eggplant Weed Control Under Clear Plastic

Location: Lane Avenue Farm
Cultivar: Classic
Planted: May 26
Treated: May 26
Ratings: Phyto & early weed - June 28
Late weed - August 6
Harvest: Multiple, July 22-Sept. 21
Soil Type: Brookston Silty Clay loam, 2% O.M.
Plot Size: 1 row 25' long, rows 5' apart
Plot Design: Randomized Complete Block with 3 reps

Summary: All treatments were non-injurious to the eggplant. Weed control was variable and in many cases not acceptable. DCPA, trifluralin, napropamide, pendimethalin, alachlor and metolachlor treatments were more acceptable if surface applied and not incorporated. Oryzalin performed best if incorporated. Although not significant, incorporated pendimethalin noticeably reduced eggplant yields as did incorporated trifluralin.

Treatment			Ratings[1]			Yield	
Herbicide	Method	Lb ai/A	Phyto	Early Weed	Late Weed	Total Fruit No.	Total Fruit Wt.
Clear plastic	---	---	10.0	2.7	3.3	97.0	75.1
Black plastic	---	---	9.7	10.0	10.0	106.3	96.6
DCPA	PPI	10.50	9.0	7.0	7.0	94.0	81.7
DCPA	Pre	10.50	9.3	8.0	7.7	100.7	86.3
Trifluralin	PPI	1.00	8.3	6.7	7.0	73.0	62.6
Trifluralin	Pre	1.00	10.0	8.0	7.3	116.3	100.7
Napropamide	PPI	2.00	9.7	7.7	7.7	95.3	79.2
Napropamide	Pre	2.00	9.0	8.0	8.0	100.0	83.1
Oryzalin	PPI	1.00	8.7	7.3	7.7	94.0	78.3
Oryzalin	Pre	1.00	8.7	6.0	6.0	90.0	74.5
Pendimethalin	PPI	1.00	10.0	6.7	6.3	88.0	66.5
Pendimethalin	Pre	1.00	9.7	8.6	8.7	110.0	90.9
Alachlor	PPI	1.00	10.0	7.0	6.0	105.3	89.0
Alachlor	Pre	1.00	9.0	8.3	7.7	79.0	63.8
Metolachlor	PPI	1.00	10.0	6.0	6.3	98.7	81.7
Metolachlor	Pre	1.00	9.7	8.0	7.3	89.0	73.5
Metolachlor	Pre	2.00	9.3	8.3	8.3	86.0	73.5
LSD 5%			NSD	1.7	2.0	NSD	NSD

[1]Rating scale: 1 = complete crop kill, no weed control
10 = no crop injury, complete weed control

LETTUCE WEED CONTROL

Location: Muck Crops Branch
Cultivar: Burpee Bibb
Seeded: April 22
Treated: PPI & Pre - April 22
Post - May 20
Weed Count: May 20
Harvested: June 24
Soil Type: Carlisle Muck, 75% O.M., pH 5.3
Plot Size: 3 rows 16" apart on 60" bed 18' long
Plot Design: Randomized Complete Block with 3 reps

Summary: Lettuce germination and early growth was somewhat variable for all treatments. Alachlor and metolachlor inhibited germination and stunted growth. Alachlor injury was more severe than metolachlor. At harvest, plants treated with metolachlor produced acceptable yields. Alachlor treated plants never recovered. Pronamide, CIPC (4 lbs) and chloramben (2 lbs) did not affect germination but did cause stunting. This early injury was also outgrown with the plants producing acceptable yields. Results with benefin were similar.

Treatment			Number of weeds per 1 ft^2							Yield	
Herbicide	Method	Lb Ai/A	Large Crabgrass	Fall Panicum	Total Grass	Common Purslane	Red Root Pigweed	Ladysthumb Smartweed	Total BRDL	Crop Phyto[1]	Total Wt(lbs)
Unweeded Check	---	---	1.7	4.3	9.0	19.7	1.3	4.0	26.7	6.7	4.0
Handweeded Check	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	12.0
CIPC	Pre	4.00	4.0	5.7	13.7	25.7	4.7	1.0	35.6	8.0	10.6
CIPC +	Pre	4.00	1.3	4.7	6.7	16.3	3.3	1.0	22.7	8.3	13.4
CIPC	Post 2-3 leaf	4.00									
Metolachlor	Pre	2.00	0.0	3.0	3.3	23.3	0.3	5.0	32.0	6.5	12.6
Alachlor	Pre	2.00	0.3	0.0	0.3	3.7	0.3	3.3	9.3	3.3	5.6
Pronamide	Pre	6.00	2.0	4.7	9.3	7.0	2.3	2.7	15.0	8.0	12.8
Pronamide	Pre	8.00	0.0	2.7	3.3	2.3	2.0	1.0	10.0	8.5	16.8
CIPC +	Pre	4.00	0.3	4.3	5.0	1.7	0.7	1.0	6.0	9.3	15.4
Chloramben	Pre	1.00									
CIPC +	Pre	2.00	1.3	5.3	7.0	0.0	2.3	0.7	7.7	9.2	14.2
Chloramben	Pre	1.00									
CIPC +	Pre	1.00	0.7	3.3	5.0	0.7	1.3	2.0	9.3	7.5	12.9
Chloramben	Pre	2.00									
Chloramben	Pre	1.00	1.7	5.3	7.3	3.0	1.0	2.0	8.6	8.3	14.5
Chloramben	Pre	2.00	0.0	2.3	3.0	0.3	0.7	0.7	3.3	8.0	13.2
Benefin	PPI	1.50	0.0	3.3	5.0	12.0	4.0	3.3	24.0	8.7	13.1
Benefin	PPI	3.00	0.7	1.0	1.7	13.3	2.0	1.7	24.3	8.8	15.5
Benefin +	PPI	1.50	0.0	3.0	5.0	14.3	3.7	2.7	23.7	9.7	15.4
CIPC	Pre	2.00									
Benefin +	PPI	1.50	0.3	3.7	5.3	20.7	3.0	1.7	28.7	8.3	12.9
CIPC	Pre	4.00									
CIPC +	Pre	4.00	3.3	4.7	8.6	3.7	2.0	0.0	11.0	9.3	14.7
Sethoxydim	Post	0.25									
CIPC +	Pre	4.00	1.3	3.7	7.0	6.7	4.3	2.0	15.3	8.3	13.1
Fluazifop-butyl	Post	0.25									
LSD 5%			1.98	3.42	4.85	10.34	NSD	2.31	13.72	1.30	2.82

[1]Visual injury scale: 1 = complete crop kill
10 = no crop injury

ONION WEED CONTROL

Location: Muck Crops Branch
Cultivar: Spartan Banner
Seeded: April 22
Treated: PPI & Pre - April 22
Cracking - May 7
Post - June 9
Weed Counts: May 20
Harvested: September 2
Soil Type: Carlisle Muck, 75% O.M., pH 5.3
Plot Size: 3 rows 16" apart on 5' bed, 18' long
Plot Design: Randomized Complete Block with 5 reps

Summary: Weed growth was quite vigorous and all plots had to be weeded prior to post treatments. Post treatments were then evaluated for crop phyto only. In 1982 there was no added benefit of a pre application of propachlor prior to CDAA + CIPC applications at cracking. This tank mix of 3 lbs each of CDAA and CIPC was an excellent treatment for early weed control.

Crop phytotoxicity ratings were made on June 22. Oxyfluorfen post treatments caused chlorotic areas on the onion leaves. 0.13 WP = 1% injury, 0.13 EC = 5%, 0.25 WP = 2%, 0.25 EC = 10% injury. Linuron treated onions had some tip burn and leaf speckling (1%). Yields were reduced for linuron treated plants. Sethoxydim and fluazifop-butyl caused minor tip burn and leaf speckling to the onions.

There was no apparent injury from any of the PPI, Pre or at cracking treatments.

Treatment			Number of weeds per 1 ft.^{2}							Yield/15' Row	
Herbicide	Method	Lb ai/a	Large Crabgrass	Fall Panicum	Total Grass	Common Purslane	Ladys-thumb	Redroot Pigweed	Total BRDL	Total Bulb No.	Total Bulb Wt.(lbs.)
Unweeded Check	---	---	3.2	6.8	13.2	81.8	13.0	1.6	100.4	0.0	0.0
Handweeded Check	---	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	134.0	34.7
Propachlor +	Pre	4.00	1.0	0.2	1.2	31.0	12.8	0.4	45.2	160.2	32.7
Oxyfluorfen WP	Post	0.13									
Propachlor +	Pre	4.00	0.6	0.0	0.8	36.6	10.6	0.8	50.2	131.6	29.0
Oxyfluorfen EC	Post	0.13									
Propachlor +	Pre	4.00	1.6	0.6	2.2	25.8	57.2	4.8	90.0	140.4	31.8
Oxyfluorfen WP	Post	0.25									
Propachlor +	Pre	4.00	0.8	0.6	1.6	31.4	7.8	1.8	42.4	152.4	31.3
Oxyfluorfen EC	Post	0.25									
Propachlor +	Pre	4.00	0.0	0.0	0.0	0.0	0.0	0.2	1.0	150.2	30.8
CDAA +	Cracking	3.00									
CIPC	Cracking	3.00									
Propachlor +	Pre	4.00	0.0	0.0	0.0	0.2	0.2	0.4	1.0	150.4	27.8
CDAA +	Cracking	3.00									
CIPC +	Cracking	3.00									
Linuron	Post	0.50									
Cyanazine	Pre	1.50	2.0	0.2	3.0	25.6	4.4	0.2	30.2	137.6	29.6
Bensulide	PPI	4.00	2.2	1.8	6.4	81.8	22.8	2.2	107.8	97.8	24.6
Bensulide +	PPI	6.00	0.0	0.0	0.0	0.0	0.4	0.0	2.4	128.2	30.7
CDAA +	Cracking	3.00									
CIPC	Cracking	3.00									
Propachlor +	Pre	4.00	1.8	0.2	2.2	36.8	11.2	0.4	48.8	150.2	29.8
Sethoxydim	Post	0.13									
Propachlor +	Pre	4.00	1.4	1.2	3.0	26.2	17.2	3.6	49.6	144.6	29.9
Sethoxydim	Post	0.25									
Propachlor +	Pre	4.00	1.8	0.0	2.6	25.2	18.2	2.0	46.2	143.6	30.2
Fluazifop-butyl	Post	0.13									
Propachlor +	Pre	4.00	1.6	0.0	1.6	37.6	22.4	0.8	62.2	149.8	30.2
Fluazifop-butyl	Post	0.25									
CDAA +	Cracking	3.00	0.0	0.2	0.2	0.0	0.0	0.4	1.0	135.2	29.5
CIPC	Cracking	3.00									
Glyphosate +	Pre-plant	4.00	2.6	3.2	6.8	99.4	8.4	2.0	110.8	141.8	36.2
Glyphosate	Wipe	33% sol.									
Glyphosate +	Pre-plant	8.00	2.4	4.7	9.3	70.2	31.0	1.2	103.6	134.0	34.0
Glyphosate	Wipe	33% sol.									
LSD 5%			1.58	4.72	5.23	26.00	21.86	2.58	27.74	25.60	3.73

Pickle Weed Control

Location: Lane Avenue Farm
Cultivar: Premier
Planted: June 14
Treated: PPI & Pre - June 14
Delayed Pre - June 18
Post I - June 27
Post II - July 14
Post III - July 23
Weed Counts: July 7
Crop Phyto: PPI, Pre, Del Pre & Post I - July 7
Post II - July 23
Post III - August 8
Harvested: Multiple Harvest July 23 - August 20
Soil Type: Brookston Silty Clay Loam, 2% O.M.
Plot Size: 1 row 25' long, rows 3' apart
Plot Design: Randomized Complete Block with 3 reps

Summary: Crop injury from delayed pre emergence and early post emergence (Post I) applications of chloramben was chlorosis of the leaf margins, some necrosis and stunting. The dry salt formulation (D.S.) was less injurious than the currently available liquid formulation. Some leaf injury was present on those plants which were treated with the granular formulation. Plants treated with Naptalam were slightly stunted. Ethalfluralin in combination with chloramben was injurious to cucumber plants. Germination was poor with the resulting plants being quite stunted. The plants soon outgrew this injury and produced acceptable yields. Fluazifop-butyl and sethoxydim proved to be quite safe on cucumber plants. The 0.25 and 0.50 lb ai/A rates resulted in an occasional plant showing some slight foliar necrotic symptoms. This injury was most often confined to the leaf margins. Visual ratings ranged from 9.5 to 10.

Treatment[1]										
Herbicide	Method	Lb Ai/A	Common Purslane	Red Root Pigweed	Total BRDL	Large Crabgrass	Green Foxtail	Total Grass	Crop Phyto[2]	Fruit Wt.(Lbs)
Unweeded Check	---	---	17.0	3.3	24.3	3.7	4.0	9.7	10.0	75.9
Handweeded Check	---	---	0.0	0.0	0.0	0.0	0.0	0.0	9.7	86.5
PPG 603 +	Pre	0.50	0.0	0.3	2.7	2.7	0.0	5.0	9.3	78.8
Sethoxydim	Post II	0.25								
PPG 603 +	Pre	0.75	0.0	0.0	0.3	0.0	0.7	1.3	9.0	76.4
Sethoxydim	Post II	0.25								
Chloramben	Del Pre	2.00	0.0	0.0	0.0	0.0	0.0	0.0	8.7	51.3
Chloramben	Del Pre	3.00	0.0	0.0	1.7	0.0	0.0	0.3	8.7	77.9
Chloramben	Post I	2.00	5.3	4.3	15.3	1.0	1.7	8.7	7.3	65.1
Chloramben	Post I	3.00	5.3	2.3	4.3	1.0	1.3	2.0	7.8	85.1
Chloramben DS	Post I	2.00	10.7	1.0	15.3	2.7	2.3	6.0	8.7	52.6
Chloramben DS	Post I	3.00	3.7	0.3	7.0	1.0	0.0	2.7	8.2	82.0
Chloramben G	Post I	2.00	3.0	1.7	5.3	2.0	2.7	5.3	9.2	67.0
Chloramben G	Post I	3.00	1.0	1.3	4.3	1.3	0.3	3.7	9.2	73.0
Naptalam L	Pre	4.00	0.0	1.0	3.7	1.0	1.3	0.3	8.3	69.0
Naptalam (4E)	Pre	4.00	0.7	0.3	3.0	1.3	0.3	2.0	8.7	71.5
Ethalfluralin +	Pre	0.75	0.0	0.0	1.3	0.0	0.0	0.0	3.7	67.8
Chloramben	Pre	2.00								
Ethalfluralin +	Pre	0.94	0.0	0.0	0.0	0.0	0.0	0.0	4.7	73.5
Chloramben	Pre	2.00								
Ethalfluralin +	Pre	1.12	0.0	0.0	1.3	0.0	0.0	0.0	4.3	68.4
Chloramben	Pre	2.00								
Bensulide +	PPI	4.00	0.0	0.3	0.0	0.0	0.0	0.0	8.3	65.6
Naptalam	PPI	2.00								
Fluazifop-butyl	Post II	0.13	1.0	0.3	1.7	0.3	1.0	2.7		66.2
Fluazifop-butyl	Post II	0.25								76.6
Fluazifop-butyl	Post II	0.50								67.5
Fluazifop-butyl +	Post III	0.13								68.6
Fluazifop-butyl	Post II	0.13								
Fluazifop-butyl +	Post III	0.25								75.0
Fluazifox-butyl	Post II	0.25								
Fluazifop-butyl +	Post III	0.50								65.8
Fluazifop-butyl	Post II	0.50								
Sethoxydim	Post II	0.20								68.5
Sethoxydim	Post II	0.40								68.8
LSD 5%			8.54	NSD	11.61	2.30	1.69	4.93	1.41	NSD

[1]All Post II and III treatments are with crop oil at 1 qt/A.
Treatments 19-26 are with Naptalam 3 lbs ai/A Pre.

[2]Crop phytotoxicity was measured on a 1-10 scale with 7 being acceptable.
1 = complete crop kill
10 = no crop injury

DCPA Incorporation Study on Pickles

Location: Lane Avenue Farm
Cultivar: Premier
Planted: June 14
Treated: June 14
Weed Counts: Phyto: July 7
Harvested: Multiple Harvests 7/27 - 8/20
Soil Type: Brookston Silty Clay Loam, 2% O.M.
Plot Size: 1 row 25' long, rows 3' apart
Plot Design: Randomized complete block with 3 reps

Summary: Crop stunting was apparent this year with the 10.5 lb rate of DCPA. This did cause a reduction in yield. A trend existed that the 7.5 lb rate of DCPA yielded higher than 10.5 lbs but lower than the handweeded check. Both the power rototiller and the rolling cultivar produced acceptable seedbeds.

Treatment			Number of weeds per 1 ft^2							
Herbicide	Incorporation Method	Lb. ai/A	Common Purslane	Red root Pigweed	Common Lambsquarter	Green Foxtail	Large Crabgrass	Crop Phyto[1]	Fruit Number	Fruit Wt.(lbs)
Handweeded check	Power Rototiller	---	0.0	0.0	0.0	0.0	0.0	10.0	287.3	74.0
Handweeded check	Rolling Cultivar	---	0.0	0.0	0.0	0.0	0.0	9.6	306.7	91.4
Weedy check	Power Rototiller	---	11.0	8.3	5.7	6.0	9.7	10.0	108.7	38.9
Weedy check	Rolling Cultivar	---	11.0	4.0	1.0	2.0	7.3	9.3	196.0	51.8
DCPA	Power Rototiller	7.5	0.0	0.0	0.0	0.0	0.0	8.7	228.7	63.5
DCPA	Rolling Cultivator	7.5	0.0	3.3	0.0	1.7	1.7	10.0	241.7	54.6
DCPA	Power Rototiller	10.5	0.0	0.0	0.0	0.0	0.0	7.0	193.7	47.1
DCPA	Rolling Cultivator	10.5	1.0	0.7	0.0	0.0	0.3	7.7	197.3	49.8
LSD 5%			7.07	4.79	2.43	2.18	5.80	NSD	86.95	23.05

[1]Crop phototoxicity was rated on a scale of 1 to 10, 7 is considered to be acceptable.

1 = complete crop kill
10 = no crop injury

Potato Weed Control

Location: Lane Avenue Farm
Cultivar: Kathadin
Planted: April 28
Treated: PPI & Pre - April 28
Delayed Pre - May 25
Post I - June 14
Post II (layby) - July 23
Weed Counts: June 7, Post I on June 24
Harvested: October 5
Soil Type: Brookston Silty Clay Loam, 2% O.M.
Plot Size: 1 row 25' long, 1 guard row between each treatment row, rows 3' apart
Plot Design: Randomized Complete Block with 5 reps

Summary: There was no apparent crop phytotoxicity from any of the treatments. Post embergence treatments with DPX-5969 were quite successful. Weeds were approx 2" tall at the time of treatment. There was no activity on common mallow, quackgrass, field bindweed or canada thistle. Pre emergence applications were quite effective on annual broadleaf weeds only. Applications of plachlor plus metribuzin or metolachlor plus metribuzin pre emergence followed by a layby application were quite effective. Sethoxydim and fluazifop-butyl were non injurious to potatoes.

Treatment			Weeds Per 1 ft^2						Yield (lbs)	
Herbicide	Method	ai/A	Common Purslane	Red Root Pigweed	Common Lambsquarter	Total BRDL	Total Crabgrass	Total Grass	#1	Total
Unweeded Check	---	---	27.4	12.7	5.6	63.4	16.0	21.0	6.4	9.0
Handweeded Check	---	---	0.0	0.0	0.0	0.0	0.0	0.0	8.3	10.9
S 734	PPI	0.75	52.4	7.2	10.6	72.8	0.2	0.4	10.5	14.0
S 734	PPI	1.00	10.8	12.6	7.4	48.2	0.8	1.0	5.9	10.3
S 734	PPI	1.50	13.2	2.4	1.4	19.0	0.2	0.2	4.4	7.8
S 734 +	PPI	0.75	0.8	0.2	0.8	2.0	0.0	0.8	8.1	14.6
Metribuzin	PPI	0.50								
Alachlor +	Pre	2.00	0.0	0.0	0.0	0.0	0.0	0.0	9.0	14.7
Metribuzin +	Pre	0.50								
Alachlor +	Post II	2.00								
Metribuzin	Post II	0.50								
Metolachlor +	Pre	2.00	0.0	0.0	0.0	0.0	0.0	0.0	11.1	14.9
Metribuzin DF	Pre	0.50								
Metolachlor +	Pre	2.00	0.0	0.0	0.4	0.4	0.0	0.0	9.9	14.8
Metribuzin +	Pre	0.50								
Metolachlor +	Post II	2.00								
Metribuzin	Post II	0.50								
DPX A5967	Pre	0.5 oz	1.4	1.4	0.8	3.8	13.6	15.0	13.4	18.2
DPX A5967	Pre	1.0 oz	0.0	0.2	1.8	2.0	5.2	5.4	13.3	17.3
DPX A5967	Pre	2.0 oz	0.0	0.0	0.0	0.0	10.0	13.2	7.8	12.6
DPX A5969	Pre	0.5 oz	0.2	0.0	0.0	0.4	16.6	19.8	13.6	19.8
DPX A5969	Pre	1.0 oz	0.0	0.0	0.0	0.0	23.6	31.8	15.1	21.3
DPX A5969	Pre	2.0 oz	0.0	0.0	0.0	0.0	1.6	4.2	15.6	21.6
Alachlor +	Pre	2.00	0.0	0.0	0.0	0.4	0.0	0.0	11.1	15.0
DPX A5969	Post I	0.125 oz								
Alachlor +	Pre	2.00	0.0	0.0	0.0	0.2	0.0	0.0	8.4	14.3
DPX A5969	Post I	0.25 oz								
Alachlor +	Pre	2.00	0.4	0.0	0.6	1.2	0.0	0.2	13.3	17.6
DPX A5969	Post I	0.5 oz								
Metolachlor +	Del Pre	2.00	0.0	0.0	0.0	0.0	0.0	0.0	8.5	14.2
Linuron	Del Pre	1.00								
EPTC	PPI	4.00	21.0	8.8	0.6	36.6	1.0	1.0	8.7	13.9
Napropamide	PPI	1.00	9.0	0.6	2.6	27.2	2.8	3.6	9.6	13.9
Napropamide	PPI	2.00	1.2	0.0	2.2	4.0	0.2	0.6	9.6	15.1
Napropamide +	PPI	1.00	5.8	0.2	2.2	8.2	0.0	0.0	5.5	10.0
EPTC	PPI	4.00								
Napropamide +	PPI	1.00	0.0	13.2	3.8	18.0	4.8	8.2	3.8	6.3
EPTC	Post II	4.00								
EPTC +	PPI	4.00	0.0	0.6	0.6	2.4	0.2	0.4	11.3	15.1
Metribuzin	PPI	0.50								
Mon 097	Pre	1.50	0.0	0.0	0.6	0.6	0.0	0.0	9.1	13.7
Mon 097	Pre	3.00	0.0	0.0	0.0	0.0	0.0	0.0	12.5	17.3
Mon 097	Pre	1.50	0.0	0.0	0.0	0.0	0.0	0.0	11.8	20.4
Metribuzin	Pre	0.50								
CGA-82725 +	Del Pre	0.25	0.0	0.0	0.0	0.0	0.0	0.0	11.6	17.8
Metribuzin	Del Pre	0.50								
CGA-82725 +	Del Pre	0.38	0.0	0.0	0.0	0.0	0.0	0.0	9.7	13.7
Metribuzin	Del Pre	0.50								
Metribuzin +	Pre	0.50	0.0	0.0	0.0	0.0	0.8	1.8	8.9	12.7
CGA-82725	Post	0.25								
Alachlor +	Del Pre	2.00	0.0	0.0	0.0	0.0	0.0	0.0	11.0	15.2
Linuron +	Del Pre	1.00								
Sethoxydim	Post II	0.25								
Alachlor +	Del Pre	2.00	0.0	0.0	0.0	0.0	0.0	0.0	11.0	15.9
Linuron +	Del Pre	1.00								
Sethoxydim	Post II	0.75								
Alachlor +	Del Pre	2.00	0.0	0.0	0.0	0.0	0.0	0.0	10.5	15.8
Linuron +	Del Pre	1.00								
Fluazifop-butyl	Post II	0.13								
Alachlor +	Del Pre	2.00	0.0	0.0	0.0	0.0	0.0	0.0	11.4	16.9
Linuron +	Del Pre	1.00								
Dluazifop-butyl	Post II	0.25								
Pendimethalin	Pre	1.00	0.0	4.4	0.4	5.8	2.0	2.6	8.4	11.5
Pendimethalin +	Pre	1.00	0.0	0.0	0.0	0.0	0.2	0.2	14.2	18.7
Metribuzin DF	Pre	0.50								
Pendimethalin +	Del Pre	1.00	0.0	0.0	0.0	0.0	0.0	0.0	11.3	16.3
Linuron	Del Pre	1.00								
Pendimethalin	Pre	1.50	3.0	7.2	2.6	12.8	1.2	1.2	8.0	12.0
LSD 5%			17.77	7.61	3.83	24.68	7.87	14.97	5.86	6.81

Potatoes/MH-30

Location: Lane Avenue Farm
Cultivar: Kathadin
Planted: May 10
Treated: August 16 (tubers Approx. 2" dia.)
Harvested: October 5
Soil Type: Brookston Silty Clay Loam, 2% O.M.
Plot Size: 1 row 25' long, 1 guard row between each treatment row, rows 3' apart
Plot Design: Randomized Complete Block with 4 reps

Summary: UBI-1525 with the crop oil was the only treatment which reduced yields. Foliar injury was not observed from this treatment. All formulations except UBI 1526 formed a light brown/pale yellow solution when added to water. UBI-1526 did not form a solution but produced more of a suspension with agitation.

Treatment	Lb ai/A	Yield (lbs.) No. 1	No. 2	No. 3	Total
Check	-	10.7	2.0	0.3	14.2
Royal MH-30	3.0	9.9	2.5	0.4	12.9
UBI-1525	3.0	11.3	2.2	0.3	14.6
UBI-1525 + Atplus 411F	3.0 1 qt.	4.5	1.3	0.4	7.3
UBI-1526			12.4	1.7	16.4
UBI-1483		12.5	2.3	0.4	17.6
LSD 5%		4.63	NSD	NSD	5.14

Sweet Corn Weed Control

Location: Lane Avenue Farm
Cultivar: Gold Cup
Seeded: May 17
Treated: PPI & Pre - May 17
Post I (spike stage) - May 25
Post II (corn 6" tall) - June 14
Weed Counts: June 11
Harvested: August 5
Soil Type: Brookston Silty Clay Loam, 2% O.M.
Plot Size 1 row 25' long, rows 3' apart, 1 guard row between each treatment row
Plot Design: Randomized Complete Block with 4 reps

Summary: Neither EPTC + R25788, EPTC + R25788 + R33865 or butylate controlled galinsoga. Control of Red root pigweed was marginal. All compounds provided excellent grass control. There was no visible crop phytotoxicity symptoms from any treatment. All treatments produced acceptable yields.

Treatment			Number of Weeds per 1 ft^2					Yield	
Herbicide	Method	Lb ai/A	Fall Panicum	Galinsoga	Redroot Pigweed	Common Purslane	Total BRDL	Cob No.	Total Cob Wt.(lbs)
Unweeded check	---	---	6.5	145.8	6.8	6.3	158.9	47.5	28.6
Handweeded check	---	---	0.0	0.0	0.0	0.0	0.0	51.8	33.7
EPTC + R25788	PPI	4.00	0.3	81.5	4.3	3.5	89.3	50.8	32.4
EPTC + R25788	PPI	6.00	0.0	51.0	2.0	2.0	55.0	49.5	29.3
EPTC + R25788 + R33865	PPI	4.00	0.3	76.5	3.3	6.5	86.3	50.3	30.1
EPTC + R25788 + R33865	PPI	6.00	0.0	33.0	2.8	7.0	42.8	47.3	29.4
PPG-844 +	Post I	0.15	3.0	2.0	0.0	0.5	2.5	50.8	31.7
Pendimethalin	Post I	1.50							
PPG-844 +	Post I	0.20	0.0	4.3	0.0	0.5	4.8	51.3	32.2
Pendimethalin	Post I	1.50							
Propachlor +	Pre	5.00	0.0	0.8	1.5	4.3	7.3	45.0	29.8
Bentazon	Post II	1.00							
Butylate	PPI	4.00	0.0	57.0	3.0	21.5	81.5	51.0	31.9
LSD 5%			3.5	66.8	NSD	10.4	66.3	NSD	NSD

Squash/Pumpkin Tolerance to Napropamide

Location: Lane Avenue Farm
Cultivar: Dixie Zucchini Squash
Spookie and Howden Pumpkin
Planted: June 10
Treated: June 10
Weed Counts: July 7
Crop Phyto: July 7
Harvested: Zucchini - July 28 to September 8
Pumpkin - October 12
Soil Type: Brookston Silty Clay Loam, 2% O.M.
Plot Size: 1 row 25' long, pumpkin rows 6' apart, zucchini rows 3' apart
Plot Design: Randomized Complete Block with 3 reps

Summary: Weed control was acceptable with all treatments. Napropamide did not significantly reduce the plant stand. 'Spookie' pumpkin was more severely injured than 'Howden'. Injury was apparent as stunting of the plants and a light green coloration of the leaf veinal tissue. Injury to 'Howden' was restricted to plant stunting. A minor amount of stunting was present in the zucchini.

Treatment			Zucchini			Spookie Pumpkin			Howden Pumpkin		
Herbicide	Method	Ai/A	Crop Phyto[1]	Fruit No.	Fruit Wt(lbs)	Crop Phyto[1]	Fruit No.	Fruit Wt(lbs)	Crop Phyto[1]	Fruit No.	Fruit Wt(lbs)
Handweeded Check	---	---	9.7	61.0	43.8	9.3	18.7	71.7	10.0	7.3	74.2
Napropamide	PPI	1.00	9.0	85.7	56.1	7.0	20.3	85.4	9.3	9.3	75.6
Napropamide	PPI	2.00	9.0	93.0	64.0	4.3	13.7	44.7	7.0	10.7	75.2
Napropamide	Pre	1.00	9.3	80.0	57.7	8.0	20.0	61.1	8.0	10.7	57.0
Napropamide	Pre	2.00	8.3	75.3	40.9	3.7	10.0	38.5	8.0	12.3	85.9
LSD 5%			NSD	18.61	NSD	2.81	5.25	23.02	1.35	3.06	NSD

[1]Visual rating scale: 1 = complete crop kill, 10 = no crop injury

GEL SEEDED TOMATOES - FREMONT

Location: Vegetable Crops Branch
Cultivar: Campbell 38
Seeded: May 11
Treated: November 10, 1981 fall napropamide
May 11, 1982 PPI and PRE
Weed Counts & Crop Phyto: June 22. 1-10 scale
1 = No weed control, complete crop kill
10 = Complete weed control, no crop injury
Harvested: September 16
Soil Type: Sandy Loam, 3% O.M.
Plot Size: 1 row 30 ft. long, beds on 5 ft. centers
Plot Design: Randomized Complete Block with 4 reps.

Summary: Weed pressure over the entire field was very light. Grass species present were fall panicum, giant foxtail and green foxtail. Broadleaf species were Velvetleaf, Pennsylvania Smartweed, Venice Mallow and Yellow Woodsorrel. Weed data shows that none of the species were very abundant.

Crop phytotoxicity ratings reveal that several treatments were injurious to the tomatoes. Injury symptoms were reduced stand and stunting. Activated carbon mixed with the anticrustant significantly safened several herbicide treatments. As the rate of chloramben was increased so did the safening effect from the carbon. Activated carbon significantly reduced the injury from metribuzin. Injury ratings of metribuzin treated tomatoes were still only marginally acceptable when carbon was used. However the tomatoes soon grew out of this early stunting and produced acceptable yields. Metribuzin treated tomatoes without carbon were the lowest yielding treatment.

Treatments with napropamide produced an apparent growth stimulation in the tomato plants. At the time of rating plants were noticeably taller with obviously more foliar growth than the checks. By harvest this difference in growth was not present. Yields were not significantly increased over the check.

Pebulate treated tomatoes were stunted and the plant stand appeared to be reduced.

The addition of napropamide to pebulate did not seem to reduce this early injury. Again by harvest the plants outgrew this injury and produced acceptable yields.

TREATMENT			NO. WEEDS PER 1 FT.^{2}				YIELD PER 30 FT. OF ROW (LBS.)		
Herbicide	Method	Lb ai/A	Fall Panicum	Total Grass	Total Broadleaf	Crop Phyto	Plant Stand	Red Fruit Wt.	Red Fruit Wt.
Unweeded Check	---	---	1.3	7.3	1.0	9.3	95.8	0.0	0.0
Handweeded Check	---	---	0.0	0.0	0.0	9.8	64.3	113.8	147.0
Napropamide	PPI (11/10/81)	2.00	1.8	2.0	0.0	9.0	75.8	114.2	149.3
Napropamide	PPI (11/10/81)	3.00	1.0	2.8	0.5	9.3	95.8	135.2	177.6
Napropamide	PPI (11/10/81)	4.00	1.0	1.0	1.5	9.3	110.0	120.7	165.4
Napropamide + Diphenamid	PPI (11/10/81) Pre	2.00 3.00	0.8	0.8	0.5	9.0	101.8	101.1	135.5
Napropamide + Diphenamid	PPI (11/10/81) Pre	3.00 3.00	0.0	0.0	0.8	8.3	96.0	98.7	133.8
Napropamide + Diphenamid	PPI (11/10/81) Pre	4.00 3.00	0.8	0.8	0.8	8.5	94.3	113.3	148.9
Napropamide + Chloramben*	PPI Pre	2.00 2.00	1.0	1.0	0.5	9.5	101.8	123.9	161.9
Napropamide + Chloramben DS*	PPI Pre	2.00 2.00	0.3	0.3	0.0	9.5	72.5	122.2	156.0
Napropamide + Chloramben	PPI Pre	2.00 2.00	0.5	0.5	0.3	9.0	76.8	111.4	143.6
Napropamide + Chloramben*	PPI Pre	2.00 3.00	0.3	0.3	0.5	9.5	85.5	102.0	139.5
Napropamide + Chloramben	PPI Pre	2.00 3.00	0.3	0.5	1.3	8.3	65.0	119.9	167.3
Napropamide + Chloramben*	PPI Pre	2.00 4.00	1.3	1.3	0.3	9.8	87.8	105.9	142.9
Napropamide + Chloramben	PPI Pre	2.00 4.00	2.0	2.0	0.0	7.5	93.3	101.4	134.4
Napropamide	PPI	2.00	0.5	0.5	1.0	9.0	132.5	100.1	139.9
Pebulate	PPI	5.00	0.3	0.3	0.0	7.3	59.8	127.0	168.7
Napropamide + Pebulate	PPI PPI	2.00 5.00	0.0	0.0	0.3	7.8	72.0	125.6	171.4
Napropamide + Diphenamid	PPI PPI	1.00 3.00	0.5	0.8	0.3	9.5	88.8	115.8	154.4
Napropamide + Diphenamid	PPI PPI	1.50 3.00	0.8	0.8	1.3	10.0	64.8	121.2	154.5
Napropamide + Diphenamid*	PPI Pre	1.50 3.00	1.0	1.0	0.0	9.3	59.5	113.9	145.4
Diphenamid*	Pre	5.00	2.8	2.8	0.8	9.0	87.0	96.0	128.2
Diphenamid	Pre	5.00	2.5	2.5	0.0	8.3	63.5	120.9	155.9
Napropamide + Metribuzin*	PPI Pre	2.00 0.50	0.0	0.0	0.0	6.8	72.3	115.3	160.0
Napropamide + Metribuzin	PPI Pre	2.00 0.50	0.0	0.0	0.0	2.0	83.5	54.5	94.1
Napropamide + Chloramben DS*	PPI Pre	1.00 2.00	1.5	1.8	0.8	9.0	82.0	116.0	151.3
Napropamide + Chloramben DS*	PPI Pre	1.50 2.00	0.0	0.0	0.3	9.8	104.5	112.7	147.9
LSD 5%			1.63	2.52	NSD	1.47	NSD	34.50	41.07

*One pound of activated carbon was mixed with each 1 ft.^{3} of vermiculite anticrustant. A total of 15 lbs. carbon (15 ft.^{3} vermiculite) was used per acre.

ACIFLUORFEN POST TREATMENT ON SEEDED TOMATOES

Location: Lane Avenue Farm
Soil Type: Brookston Silty Clay Loam, 2% o.m.
Cultivar: Campbell 38
Seeded: May 6
Treated: PPI - May 16
Post I - May 25
Post II - June 14
Ratings: June 1
Harvest: September 2
Plot Size: 1 row on bed 5' centers, 25' long
Plot Design: Randomized complete block with 3 reps

Summary: Early post treatments of acifluorfen were quite injurious to both black nightshade and tomato seedlings. The first application burnt the tomato leaf tissue. The low rate (0.13 lbs/A) was not as harmful as the higher rates (0.25-0.38 lbs/A). These treatments did not kill the growing points and many plants showed regrowth within 2 weeks. A definite rate response exists. Black nightshade showed less tolerance to acifluorfen than did the tomatoes. Injury was more severe on the nightshade. Black nightshade was not killed by the lowest rate, only severely burnt. By the date of the second application, a considerable amount of regrowth was present. Higher treatments had less regrowth.

Injury to the tomatoes was much less with the second application. Only minor leaf speckling and curling was observed on the tomato leaves. Injury ratings ranged from 10%, with the low rate to 30% with the high rate.

Black nightshade was still quite sensitive and, for the most part, was completely killed. A simple cultivation was able to completely clean the plot.

TREATMENT						
Herbicide	Method[1]	lb ai/A	% Crop Injury	% Nightshade Injury	Fruit No.	Fruit Weight (lbs.)
Napropamide + Acifluorfen	PPI Post I	2.00 0.13	25.0	50.0	1344.0	163.3
Napropamide + Acifluorfen	PPI Post I	2.00 0.25	58.3	58.3	1073.0	126.4
Napropamide + Acifluorfen	PPI Post I	2.00 0.38	96.7	96.7	473.0	64.1
Napropamide + Acifluorfen + Acifluorfen	PPI Post I Post II	2.00 0.13 0.13	25.0	41.7	1307.7	160.7
Napropamide + Acifluorfen + Acifluorfen	PPI Post I Post II	2.00 0.25 0.25	50.0	66.7	1228.7	156.3
Napropamide + Acifluorfen + Acifluorfen	PPI Post I Post II	2.00 0.38 0.38	83.3	96.7	735.0	99.8
Napropamide	PPI	2.00	0.0	0.0	1091.3	139.0
LSD 5%			15.0	16.3	314.3	63.9

[1]Post I applied when black nightshade was in the 2-4 leaf stage (approx. 1-2" tall). Tomatoes were in the 2 true leaf stage (2-3" tall).
Post II applied when black nightshade was 2-3" in height. Tomatoes had 3-6 leaves (4-5" tall).

POST EMERGENCE GRASS STUDY

Location: Lane Avenue Farm
Treated: June 22
Rating: July 16
Plot Size: 3 ft. x 25 ft.
Plot Design: Randomized Complete Block with 3 reps

Summary: Grass species present were hairy crabgrsss, green foxtail, barnyardgrass and fall panicum. Phytotoxic symptoms were slow to develop on the grass plants. The addition of a crop oil to Hoe 00581 did not significantly improve its performance. The 0.05 lbs ai/A rate of Hoe 00581 did not provide satisfactory grass control. Sethoxydim also failed to provide satisfactory grass control. Growth of the grass plants was quite slow and the plants were relatively hard at the time of application. This may have affected absorption and translocation.

TREATMENT			
Herbicide	Lb ai/A	Surfactant[1]	Rating[2]
Hoe 00581	0.05	-	6.3
Hoe 00581	0.05	+	4.0
Hoe 00581	0.10	-	10.0
Hoe 00581	0.10	+	10.0
Hoe 00581	0.15	-	9.0
Hoe 00581	0.15	+	10.0
Hoe 00581	0.20	-	9.7
Hoe 00581	0.20	+	9.7
Sethoxydim	0.20	+	6.0
Fluazifop-butyl	0.20	+	8.7
LSD 5%			1.7

[1]crop oil 1 qt/A: + = crop oil added
- = crop oil not added

[2]visual rating scale: 1 = no weed control
10 = complete weed control

Non Selective Weed Control

Location: Lane Avenue Farm
Treated: June 22
Rating: July 12
Plot Size: 5' x 25'
Plot Design: Randomized Complete Block with 4 reps.
Weed Stage: Prior to treatment

Species	Size 0-6" Study (in.)	18-30" Study (in.)
Lambsquarter	-	24
Galinsoga spp.	4	12
Velvetleaf	-	18
Redroot pigweed	6	24
Giant foxtail	4	18
Barnyard grass	12	18
Common purslane	6	-
Hairy crabgrass	12	-

Summary: Broadleaf weed control in the short (0-6") weed plot was not complete. Galinsoga was extremely hard to control. Even at the high rates control was marginal with glyphosate. SC-0545 and SC-0224 was more phytotoxic to galinsoga, however, control was still not 100%. As the rates decreased so did the galinsoga control.

The field plot which contained the short (0-6") weed study was considerably dryer than the tall (18-30") study. This dryness could have limited translocation of the weed species. However, it is interesting to note that galinsoga exhibited the tolerance that it did.

Glyphosate, SC-0545 and SC-0224 all appeared to have more activity on grass spp. than broadleaf weed spp. The grassy weeds showed signs of visible injury sooner than the broadleaf weeds. At rates above 1 lb ai/A lack of control was primarily due to surviving broadleaf weeds (mainly galinsoga and some lambsquarter). These findins are also true on the tall weed plot.

Hoe-00661 exhibited poor control of common purslane. Other broadleaf and grassy weeds exhibited similar tolerances.

Herbicide	Post Applied Weed Growth (in.)	Lbs. ai/A	Rating[1]
Unweeded check	---	---	0.0
Glyphosate	0-6	1.50	6.0
Glyphosate	0-6	1.00	4.7
Glyphosate	0-6	0.75	2.3
Glyphosate	0-6	0.50	3.0
SC-0545	0-6	1.50	9.0
SC-0545	0-6	1.00	7.0
SC-0545	0-6	0.75	5.7
SC-0545	0-6	0.50	4.0
SC-0224	0-6	1.50	9.0
SC-0224	0-6	1.00	6.0
SC-0224	0-6	0.75	5.0
SC-0224	0-6	0.50	3.0
Glyphosate	18-30	1.50	9.0
Glyphosate	18-30	1.00	8.0
Glyphosate	18-30	0.75	7.7
Glyphosate	18-30	0.50	4.7
SC-0545	18-30	1.50	10.0
SC-0545	18-30	1.00	9.3
SC-0545	18-30	0.75	6.3
SC-0545	18-30	0.50	7.3
SC-0224	18-30	1.50	10.0
SC-0224	18-30	1.00	10.0
SC-0224	18-30	0.75	8.0
SC-0224	18-30	0.50	5.7
Hoe 00661	0-6	2.25	9.7
Hoe 00661	0-6	1.50	8.7
Hoe 00661	0-6	1.00	6.3
Hoe 00661	0-6	0.75	5.7
Paraquat	0-6	1.00	8.3
LSD 5%			1.62

[1]Visual rating scale: 1 = No weed control
10 = Complete weed control

Photo Degradable Plastic Mulch

Location: Lane Avenue Farm
Cultivar: Burpee Hybrid Muskmelons
Yolo Wonder Peppers
Mulch layed: May 26
Planted: May 26
Harvested: Multiple Harvests, 8/2-10/1
Soil Type: Brookston Silty Clay Loam

Summary:

June 5: Polypropylene (both clear and black is beginning to break down. Appears to be 'melting' into soil. All other mulches are intact.

June 7: No change in polypropylene mulch since 6/5 rating. Polybutylene is now breaking down. Mulch is tearing leaving large holes. Black is breaking down faster (20% soil exposed) than clear (15%). Plastic under peppers is breaking down faster (5%) than the melons. Melons are now covering the entire mulched area.

July 26: Polypropylene is very slowly breaking down. Approximately 5-10% of the underlaying soil is exposed. Polybutylene is breaking down much faster now. 75-70% of the soil is now exposed in the pepper areas. The mulch under the melons has not changed. Only 5-10% of the soil is exposed. The brown photodegradable mulch (Ecolite) is now starting to break down. This mulch is tearing. In the pepper plots 10-15% of the soil is exposed. The plastic under the melons is intact.

August 6: Polybutylene is completely gone now except for the buried edges. There is no change in the condition of the polypropylene. The brown mulch is tearing into large pieces. Approximately 25-30% of the soil is exposed.

October 19: Polybutylene did not break down much. 80-85% of the plastic in the pepper plot is still intact. The brown plastic continued to break down. A strip approximately 4" wide at the base of the pepper plant remained. This plastic was very paper like. The mulch under the plastic is mostly gone with the remaining being brittle and paper like.

Treatment	Muskmelon		Peppers	
	Fruit No.	Fruit Wt.(lbs)	Fruit No.	Fruit Wt.(lbs)
Clear Plastic	83	238.4	699	117.5
Black Plastic	89	227.5	608	102.9
Bare Soil	85	243.4	613	121.3
Black Polybutylene	95	308.5	675	116.3
Clear Polybutylene	101	276.0	519	90.1
Black Polypropylene	108	345.0	690	149.2
Clear Polypropylene	72	189.4	451	62.8
Brown Degradable	98	276.5	729	111.1
LSD 5%	NSD	NSD	NSD	NSD

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